

1 are design variables that, at least in part, will be dependent upon the anticipated capacity of the
2 entire gin equipment.

3 **We claim:**

1 1. A combination dryer-cleaner apparatus for a cotton gin for enhancing the drying
2 function and cleaning function while reducing damage to the cotton fiber, the apparatus
3 comprising:

4 a) a dryer for receiving raw field cotton, said dryer having at least one rotating cylinder
5 for busting any compacted wads of field cotton and for dispersing the field cotton into individual
6 bolls to enhance drying, said dryer also having a circuitous route for transferring the cotton to a
7 cleaner to enhance drying;

8 b) a cleaner for separating trash from the raw cotton; and

9 c) said dryer being mounted upon said cleaner and communicating therewith through an
10 unrestricted opening to permit immediate and substantially unrestricted transfer of the raw cotton
11 from the dryer to the cleaner to effectuate cleaning before the trash recombines with the cotton
12 and while it remains in a heated condition when trash separation is enhanced.

1 2. An apparatus as recited in claim 1 in which said dryer has a plurality of depending
2 shelves and a plurality of rotating cylinders for thrusting the cotton against an adjacent
3 depending shelf to define the circuitous route for the descending cotton to enhance moisture
4 removal.

1 3. An apparatus as recited in claim 1 in which said dryer is vertical and has a plurality of
2 vertically spaced cylinders and associated paddles thrusting said cotton into a circuitous route to

3 enhance the drying. .

1 4. An apparatus as recited in claim 2 in which said shelf is formed of spaced apart T
2 shaped grid beams extending downwardly from the dryer housing.

1 5. An apparatus as recited in claim 4 in which said T beams have square edges to that
2 inhibit the collection of trash in the spaces between the T beams.

1 6. An apparatus as recited in claim 1 in which said cleaner has a plurality of rotatable
2 horizontally spaced spike cylinders spaced above grid bars through which trash may pass for
3 removal from the cotton.

4 7. An improved process of drying and cleaning cotton comprising the steps of:

5 a) directing raw cotton in an air stream to a dryer;

6 b) substantially reducing the moisture level of the raw cotton to approximately 5% in the
7 dryer;

8 c) transferring the cotton from the dryer to a cleaner without compaction or entanglement

9 of trash with the raw cotton.

10 8. A process as recited in claim 7 in which includes the step of:

11 a) causing the raw cotton to pass through a circuitous route as it passes through the dryer

12 to enhance the removal of moisture and to loosen the trash therefrom.

1 9. A process as recited in claim 6 in which the cotton is transferred from the dryer to the
2 cleaner without the use of piping.

1 10. An improved field cotton dryer comprising:

2 a) a housing;

3 b) a plurality of vertically spaced depending shelves supported by the housing of the
4 dryer, said shelves depending from the walls an inclined angle of more than 10 degrees;

5 c) said shelves being formed of a plurality of spaced apart T beams for permitting air to
6 pass therethrough while directing the cotton along its surface;

7 d) a rotatable wad busting cylinder journaled in said housing below the end of each of
8 said shelves for thrusting said cotton in a circuitous route against another shelf to assist in the
9 removal of moisture.

1 11. An improved dryer as recited in claim 10 in which said depending shelves are
2 mounted within a slotted bracket carried by the housing.

1 12. An improved dryer as recited in claim 10 in which the T beams have outer edges that
2 are rectangular so as to minimize the clogging of cotton and trash between said beams.

1 13. An improved dryer as recited in claim 10 in which said T beams are formed of
2 aluminum to achieve lightness and durability.

1 14. An improved dryer as recited in claim 10 in which said T beams are formed of

2 extruded aluminum to reduce costs.